

*Appl. No. 09/986,398
Supplemental Response dated April 7, 2004
Reply to Office Action dated November 12, 2003*

*Docket No. 0630-1349P
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CLAIM SET AS AMENDED

1. (Previously Presented) A lighting apparatus using microwaves, comprising:
 - a resonator for transmitting a light and preventing an escape of the microwaves;
 - a conical shaped waveguide for transmitting the microwaves into the resonator;
 - a microwave generating means installed on a side of the waveguide and transmitting the microwaves into the waveguide; and
 - a bulb placed at a center of the resonator and emitting the light resulting from a plasma excited by the microwaves transmitted through the waveguide,
 - wherein said waveguide is placed at an internal domain of the resonator.
2. (Previously Presented) The apparatus of claim 1, wherein the resonator has a spherical shape, and the waveguide is installed within a radial sector of the resonator.
3. (Previously Presented) The apparatus of claim 2, wherein the resonator has an opened portion for receiving the waveguide, and the waveguide is fixed to the resonator by being inserted into the opened portion of the resonator.
4. (Previously Presented) The apparatus of claim 3, wherein outwardly extended flange portions are respectively provided on the resonator and the waveguide, and respectively fixed to the resonator and the waveguide by fixing means.

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5. (Previously Presented) The apparatus of claim 2, wherein a vertex of the conical shaped waveguide is placed at the center of the resonator, an opened bottom portion of the waveguide is provided with a curved surface having a same shape as the spherical shape of the resonator, the bottom portion of the waveguide corresponding to an external extended portion of the resonator.

6. (Previously Presented) The apparatus of claim 5, wherein the waveguide includes a conical shaped body portion, and a cover portion being fixed to the opened bottom portion.

7. (Previously Presented) The apparatus of claim 5, wherein the waveguide has at least one first outlet at an inclined plane to an internal area of the resonator in order to transmit microwaves into the resonator.

8. (Previously Presented) The apparatus of claim 7, wherein a plurality of first outlets are provided with lengths in a radial direction of the resonator and centering around the vertex of the waveguide.

9. (Previously Presented) The apparatus of claim 7, wherein the at least one first outlet is arranged with a length in a radial direction of the resonator and at least one second outlet is arranged with a length in a circumferential direction of the resonator, the first and second outlets being centered around the vertex of the waveguide.

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10. (Previously Presented) The apparatus of claim 5, wherein the vertex of the waveguide includes a concave portion for receiving the bulb.

11. (Previously Presented) The apparatus of claim 10, wherein a reflecting means is installed between the bulb and the concave portion of the waveguide in order to reflect the light emitted from the bulb.

12. (Original) The apparatus of claim 11, wherein the reflecting means is a reflecting mirror installed between the bulb and the concave portion of the waveguide.

13. (Previously Presented) The apparatus of claim 11, wherein the reflecting means is a reflecting layer coated onto an outer surface of the concave portion of the waveguide.

14. (Previously Presented) The apparatus of claim 1, further comprising:
a casing combined and fixed to a bottom portion of the waveguide at the external region of an extended portion of the resonator in order to cover the microwave generating means, a high voltage generator and a cooling unit.

15. (Canceled).

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16. (Currently Amended) The apparatus of claim 1, wherein the microwave generating means is fixed to the waveguide at the an external region of an extended portion of the resonator.

17. (Previously Presented) The apparatus of claim 1, further comprising
a rotation shaft connected to the bulb and penetrating the waveguide; and
a bulb motor placed at a bottom surface of the waveguide and rotating the bulb by
being connected to the end of the rotation shaft.

18. (Previously Presented) A lighting apparatus using microwaves, comprising:
a resonator for transmitting a light and preventing an escape of the microwaves;
a waveguide for transmitting the microwaves into the resonator;
a microwave generating means installed on a side of the waveguide and transmitting
the microwaves into the waveguide;

a bulb placed at a center of the resonator and emitting the light resulting from a
plasma excited by the microwaves transmitted through the waveguide; and

outwardly extended flange portions respectively provided on the resonator and the
waveguide, the waveguide being placed in an internal domain of the resonator, and being
fixed to the resonator by fixing means passing through the extended flange portions.

19. (Previously Presented) The apparatus of claim 18, wherein the waveguide is
installed within a radial sector of the resonator.

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20. (Previously Presented) The apparatus of claim 19, wherein the resonator has an opened portion for receiving the waveguide, and the waveguide is fixed to the resonator by being inserted into the opened portion of the resonator.